avgear

USER MANUAL

AVG-MS44

Matrix Switcher
HDMI 4x4

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Version: MS44_2015V1.0

AVG-MS44 is a high-performance digital matrix switcher for HDMI signals, including 4 HDMI inputs and 4 HDMI outputs.

Features

- Supports HDMI 1.4a, 1080P@60Hz 3D, DVI1.0 compatible
- Supports 6.75Gbps bandwidth
- Intelligent EDID data management
- Online upgradable via USB port on the front panel
- LCD screen shows real-time connection status, switching status, whether input/ output signal contains HDCP and output resolution.

PLEASE READ THIS PRODUCT MANUAL CAREFULLY BEFORE USING THIS PRODUCT.

This manual is only for operation instruction only, and not to be used in a maintenance capacity. The functions described in this version are current as at March 2015. Any changes of functions and operational parameters will be updated in future manual versions. Please refer to your dealer for the latest product details.

Version 1.0 1/3/15

SAFETY OPERATION GUIDE

In order to guarantee the reliable operation of the equipment and safety of the user, please abide by the following procedures in installation, use and maintenance:

1. The system must be earthed properly. Please do not use two blade plugs and ensure the alternating power supply ranges from 100v to 240v and from 50Hz to 60Hz.
2. Do not install the switcher in an environment where it will be exposed to extreme hot or cold temperatures.
3. This unit will generate heat during operation, please ensure that you allow adequate ventilation to ensure reliable operation.
4. Please disconnect the unit from mains power if it will be left unused for a long time.
5. Please DO NOT try to open the casing of the equipment, DO NOT attempt to repair the unit. Opening the unit will void the warranty. There are high voltage components in the unit and attempting to repair the unit could result in serious injury.
6. Do not allow the unit to come into contact with any liquid as that could result in personal injury and product failure.

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1. Introduction

1.1 Introduction to the AVG-MS44

AVG-MS44 is a high-performance digital matrix switcher for HDMI signals, including 4 HDMI inputs and4 HDMI outputs. It conforms to HDCP standards, supports HDMI 1.4a, and can handle 1080P 3D signals. It can be controlled via a range of control methods including front panel buttons, RS232 serial port and IR.

1.2 Features

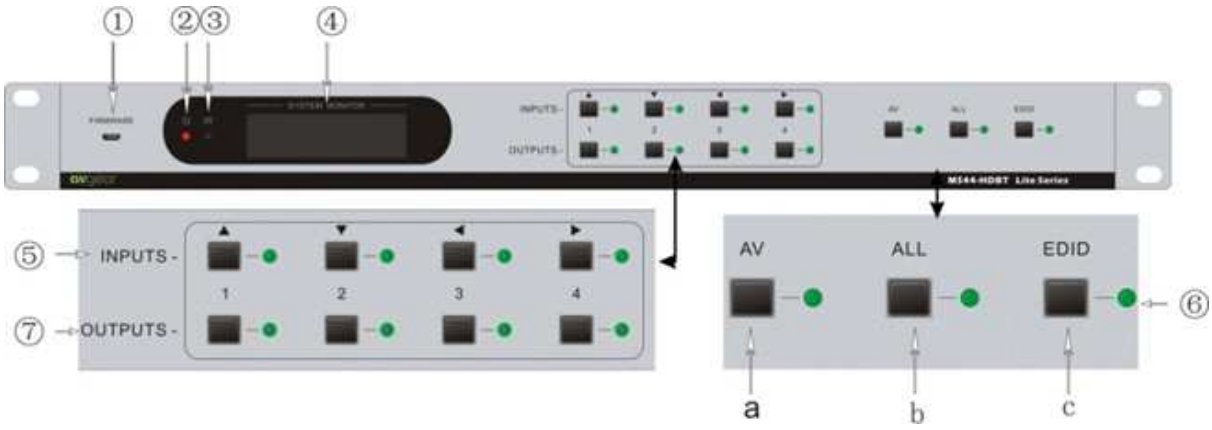
- Supports HDMI 1.4a, 1080P@60Hz 3D, DVI1.0 compatible
- Supports 6.75Gbps bandwidth
- Intelligent EDID data management
- Supports online upgrade process via USB port on front panel
- LCD screen shows real-time connection status, switching status, whether input/ output signal is with HDCP and output resolution.

1.3 What's in the Box

- 1 x AVG-MS44
- 2 x Mounting ears (6 x Screws)
- 1 x RS232 cable
- 4 x Plastic cushions (4 x Screws)
- 1 x Power adapter (12V DC)
- 1 x IR remote
- 1 x IR receiver
- 1 x User manual

Note: Please confirm that the product and accessories are all included, if not please contact your dealer.

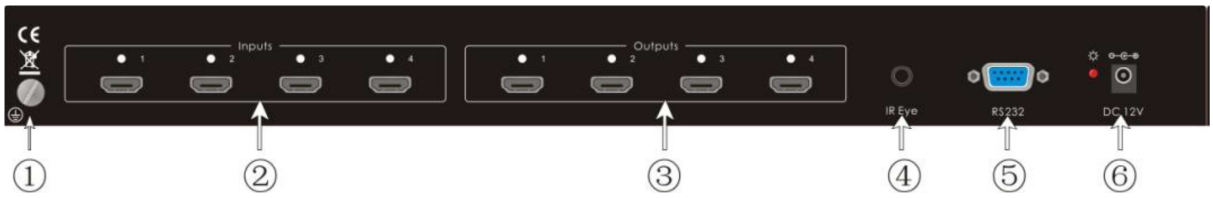
2. Product Appearance



2.1 Front Panel

No.	Name	Description
①	Firmware	Micro USB port for firmware update.
②	Power Indicator	Illuminates red when power is on.
③	IR Receiver	In-built IR sensor, receives control signal from IR remote.
④	LCD Screen	Shows real-time system status.
⑤	INPUTS/ Menu buttons	Normal mode: Input buttons, ranging from "1" to "4". Query mode: Press “AV” and hold for more than 3 seconds to enter this mode. Press ◄► to change menus, ▲▼ to change selections.
⑥	Function buttons	▪ **AV** synchronous button: To transfer AV signal synchronously by the switcher. **Example:** To transfer the AV signals from Input 1 to Output 3. **Operation:** Press buttons in this order “Input 1”, “AV”, “Output 3”.
		▪ **ALL** outputs button: To transfer one input to all outputs. **Example:** To transfer the AV signal from Input 1 to all output channels. **Operation:** Press buttons in this order “Input 1”, “ALL”.
		▪ **EDID** management button: manually capture and learn the EDID data from output device to Input port. **Example:** Input 2 captures and learns the EDID data from Output 4. **Operation:** Press buttons in this order “EDID”, “Input 2”, “Output 4”.
⑦	OUTPUTS	Output buttons, ranging from "1" to "4", correspond to the 4 HDMI outputs ports.

2.2 Rear Panel



No.	Name	Description
①	GROUND	Chassis Ground Terminal.
②	INPUTS	4 HDMI input ports, connect with HDMI ports of signal sources.
③	OUTPUTS	4 HDMI output ports, connect with HDMI ports of output source devices.
④	IR EYE	Connect with IR receiver, use the IR remote to control the AVG-MS44.
⑤	RS232	The serial port for unit control, 9-pin female connector, connects with control device such as a PC. (Make sure to set corresponding communication protocol parameters correctly.)
⑥	Power Indicator	Illuminates red when powered on.

3. System Connection

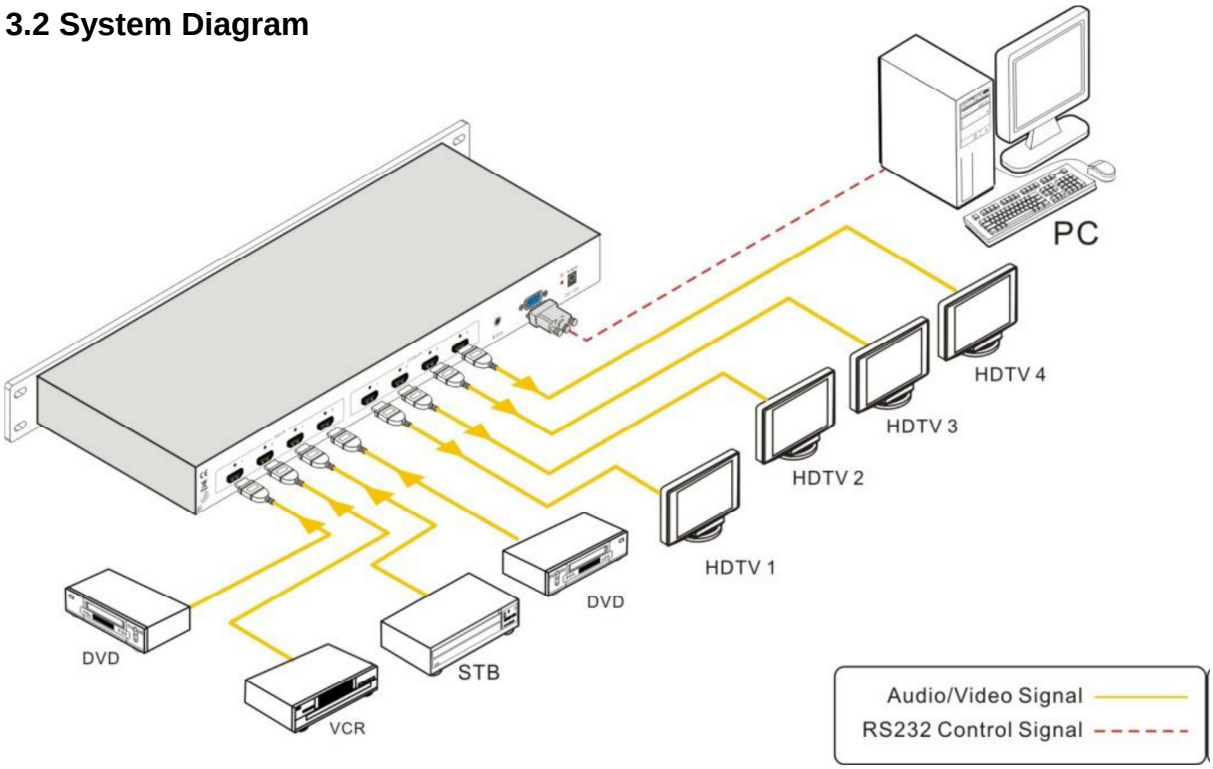
3.1 Usage Precautions

1) System should be installed in a clean environment with temperature and humidity maintained to within equipment specification.

2) All of the power switches, plugs, sockets and power cords should be insulated for safe.

3) All devices should be connected before power on.

3.2 System Diagram



3.3 Connection Procedure

1) Connect HDMI sources (e.g. DVD) to HDMI “INPUTS” of AVG-MS44 with HDMI cables.

2) Connect HDMI displayers to HDMI “OUTPUTS” of AVG-MS44 with HDMI cables.

3) Connect the RS232 port (9 pin female connector) of AVG-MS44 to a control device with a serial cable, and control AVG-MS44 via the control device (e.g. a PC).

4) Connect IR receiver to the IR Eye port.

5) Connect 12V DC power adaptor to AVG-MS44.

3.4 System Applications

The AVG-MS44’s performance and transmission stability makes it perfect for use in the computer realm, security monitoring, big screen displays, conference system, television, education and banking institutions etc.

4. System Operations

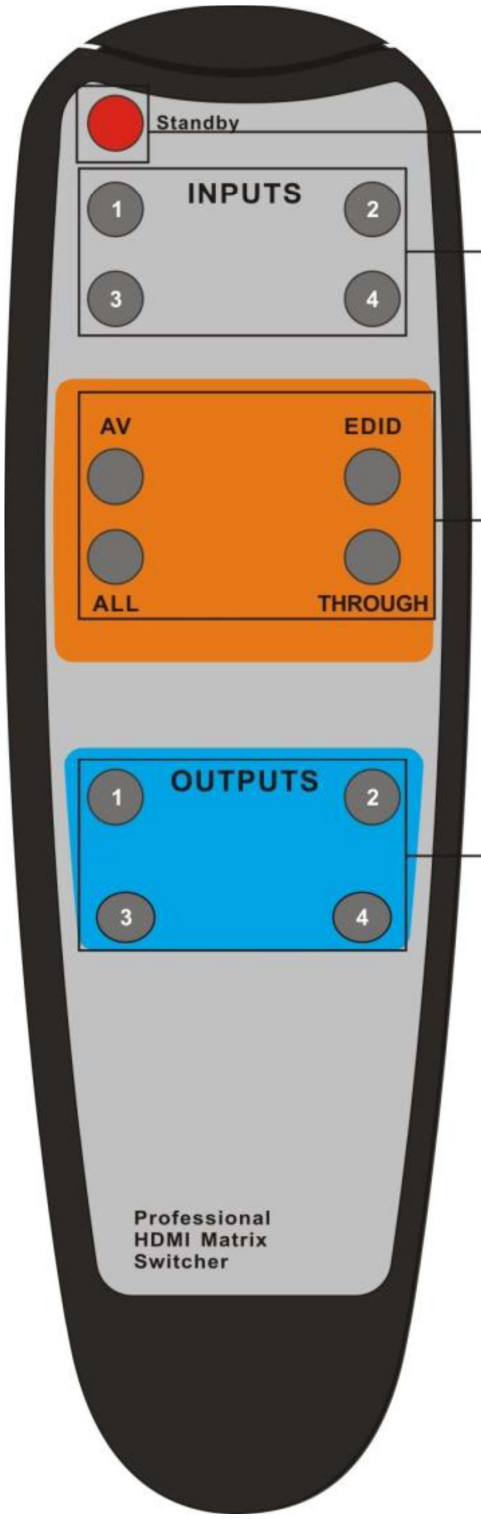
4.1 Button Control

The operation examples are showed in ***2.1 Front Panel.*** Here we make a brief introduction to the system Query operations.

By pressing the button “AV” for 3 seconds, it will enter into system query menu. Use ◄► to check the previous/next item.

Function Items	Example	Description
Check the connection status of inputs	In 1 2 3 4 Connect Y Y Y Y	Y means the corresponding port is connected with input device, N means not.
Check the connection status of outputs	Out 1 2 3 4 Connect Y Y N N	Y means the corresponding port is connected with output device, N means not.
Correspondence between inputs and outputs	Out 1 2 3 4 Input 1 2 3 3	Shows the correspondence between the 4 inputs and 4 outputs.
Check if the input is with HDCP	In 1 2 3 4 HDCP Y Y Y N	Y means the input signal is with HDCP, N means not.
Check if the output is with HDCP	Out 1 2 3 4 HDCP Y Y Y N	Y means the output signal is with HDCP, N means not.
Check the output resolution	Resolution Out 1 1920×1080	Use Up Down buttons to check all the 4 output resolutions.

4.2 IR Control
4.2.1 Usage of IR Remote



Standby button, press it to enter/exit standby mode.

Input channels, range from 1~4.

Menu buttons, **AV, ALL** and **EDID** buttons have the same functions as **AV, ALL** and **EDID** on the front panel.
THROUGH: to transfer the signals directly to the corresponding output channels.
Example: Press “3”, “THROUGH”, the result will be IN 3→OUT 3. Press “ALL”, “THROUGH”, the result will be: 1→1, 2→2, 3→3, 4→4.

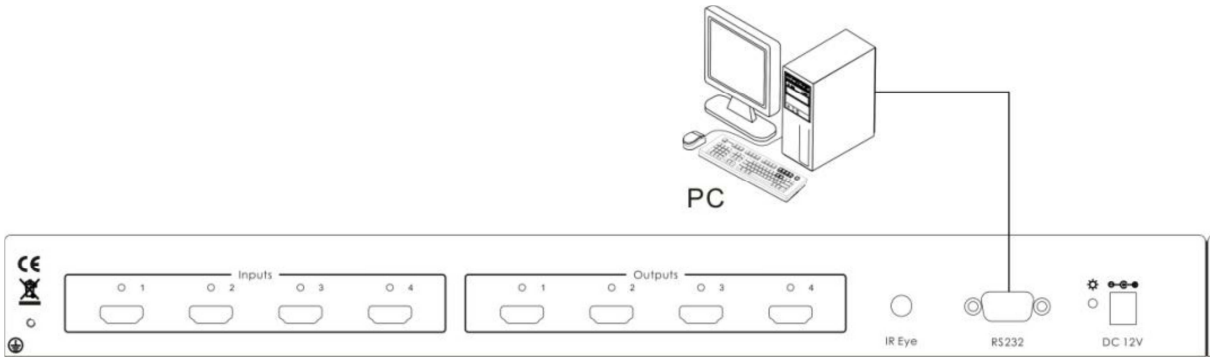
Output channels, ranges from 1~4.

Note: In-built IR or extended IR receiver connected to IR Eye can control the device with this remote control.

4.3 RS232 Control

4.3.1 Control AVG-MS44 via a PC

To control AVG-MS44, you need to connect the 9 pin female RS232 port to a PC's RS232 port. By using RS232 control software and setting right specifications, you are able to control AVG-MS44.



4.3.2 PC RS232 Control Software Setting

Installation: Copy the control software file to the computer which is connected with HDMI Matrix Switcher.

Removal: Delete all the control software files in corresponding file path.

Basic Settings:

Firstly, connect the HDMI Matrix Switcher with all input source devices and output display devices. Then connect HDMI Matrix Switcher with a computer which is installed with RS232 control software.

Note: Please set the parameters (including COM number, baud rate, data bit, stop bit and the parity bit) correctly, and then you are able to send commands.

4.3.3 RS232 Commands

Communication protocol: RS232 Communication Protocol

Baud rate: 9600 Data bit: 8 Stop bit: 1 Parity bit: None

Command Codes	Functions	Feedback Example
/*Type;	Query the models information.	AVG-MS44
/%Lock;	Lock the front panel buttons on the Matrix.	System Locked!
/%Unlock;	Unlock the front panel buttons on the Matrix.	System Unlock!
/^Version;	Query the version of firmware	V1.X.X
/:MessageOff;	Turn off the feedback command from the com port. It will only show the "Switch OK!".	/:MessageOff;
/:MessageOn;	Turn on the feedback command from the com port.	/:MessageOn;
Demo.	Switch to the "demo" mode, 1->1, 2->2, 3->3 … and so on .The switching interval is 2 seconds.	Demo Mode
Undo.	To cancel the previous	Undo OK!

	operation.	
[x]All.	Transfer signals from the input channel [x] to all output channels	1 To All.
All#.	Transfer all input signals to the corresponding output channels respectively.	All Through.
All$.	Switch off all the output channels.	All Closed.
[x]#.	Transfer signals from the input channel [x] to the output channel [x].	1 Through.
[x]$.	Switch off the output channel [x].	1 Closed.
[x]@.	Switch on the output channel [x].	1 Open.
All@.	Switch on all output channels.	All Open.
[x1] B[x2].	Transfer the AV signal from the input channel [x1] to the output channel [x2].	01B02
Status[x].	Query [x] output statues.	AV: 1-> 1
Status.	Query all outputs statues one by one.	AV: 1-> 1 AV: 1-> 1 AV: 2-> 2 AV: 3-> 3 AV: 4-> 4
Save[Y].	Save the present operation to the preset command [Y], ranges from 0 to 9.	Save To F1
Recall[Y].	Recall the preset command [Y].	Recall From F1
Clear[Y].	Clear the preset command [Y].	Clear F1
PWON.	Work in normal mode.	PWON
PWOFF.	Enter into standby mode.	PWOFF
/%[Y]/[X]:[Z].	HDCP management command. [Y] is for input (value: I) or output (value: O). [X] is the number of one port, if the value of X is ALL, it means all ports. [Z] is for HDCP compliance status (value: 1 or 0, 1 stands for “with”, 0 stands for “without”). Y=I & Z=1, means the input port is compliant with HDCP. Y=O & Z=1, means output with HDCP. Y=I & Z=0, means the input port is not	/%I/ALL:0.
compliant with HDCP. Y=O & Z=0, means output without HDCP.		

%0800.	Manual HDCP management.	%0800.
%0801.	Automatically HDCP management. If input is with HDCP, so is output.	%0801.
EDIDH[x]B[y].	Input port [y] learns the EDID from output port [x]. If the EDID data is effective and the audio part supports not only PCM mode, then force-set it to PCM mode. If the EDID data is not effective, then set it as initialized EDID data.	EDIDH01B01
DigitAudioON[x].	DigitAudio	DigitAudio ON with Output 4
DigitAudioOFF[x].	Disable HDMI audio output of port x. X=1, 2, 3, 4, disable this one port. X=5, disable all the 4 ports.	DigitAudio OFF with Output 4
%0911.	Reset to factory default.	Factory Default
%9961.	Check the system locking status.	PWON /PWOFF
%9962.	Check the status of standby mode.	System Unlock!
%9971.	Check the connection status of the inputs.	In 1 2 3 4 Connect N N N N
%9972.	Check the connection status of the outputs.	Out 1 2 3 4 Connect Y N N N
%9973.	Check the HDCP status of the inputs.	In 1 2 3 4 HDCP N N N N
%9974.	Check the HDCP status of the outputs.	Out 1 2 3 4 HDCP N N N N
%9975.	Check the switching status.	Out 1 2 3 4 In 1 2 3 4
%9976.	Check the output resolution.	
%9977.	Check the status of digital audio of output channels.	Out 1 2 3 4 Audio Y Y Y Y
%9978.	Check whether the input port is compatible with HDCP	In 1 2 3 4 HDCPEN Y Y Y Y
EDIDPCM[x].	Set the audio part of input port [x] to PCM format in EDID database.	EDIDPCM01
EDIDG[x].	Get EDID data from the output and display the	
output port number of X.		
EDIDMInit.	Recover the factory default EDID data.	EDIDMInit.
EDIDM[X]B[Y].	Manually EDID switching. Learn the EDID data of output[X] to the input[Y].	EDIDM03B01

EDIDUpgrade[x].	Upgrade EDID data via the RS232 port [X] is for input port, when the value of X is 5, it means to upgrade to all input ports. When the switcher gets the command, it will show a message to send EDID file (.bin file). Operations will be cancelled after 10 seconds. (Note 1) Please cut off all connections of HDBaseT ports.	Please send the EDID file
UpgradeIntEDID[x].	Select one type of EDID data and upgrade built-in EDID data. Supports 4 types of EDID data: 1. 1080P, 2D, PCM2.0 2. 1080P, 2D, 5.1 (audio) 3. 1080P, 3D, PCM2.0 4. 1080P, 3D, 5.1 (audio) [x] = 1, 2, 3 or 4 When the switcher gets the command, it will show a message to send EDID file (.bin file). Operations will be cancelled after 10 seconds.	Please send the EDID file
EDID/[x]/[y].	Set the built-in EDID data of input port [x] to type [y]. The value of [y] is 1, 2, 3, and 4. The EDID data types are same as mentioned above.	EDID/02/01

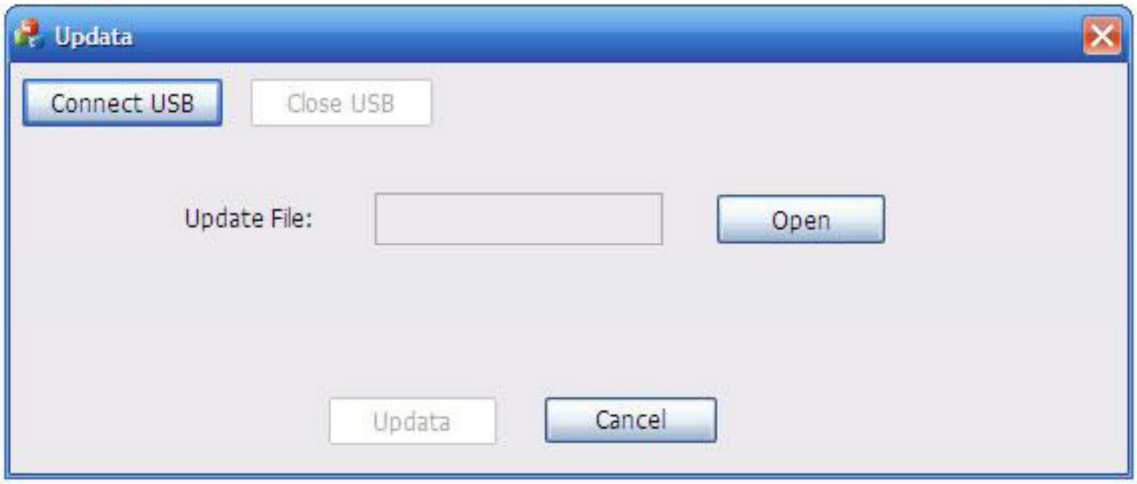
Note:

1. Please disconnect all the twisted pairs before sending command EDIDUpgrade[X].
2. In the above commands, “[”and “]” are symbols to aid reading and do not need to be typed in actual operation.
3. Please remember to end the commands with the end symbols “.” or “;”.
4. Type the command carefully, it is case-sensitive.

4.4 USB Firmware Updating

To meet with the request of different users or additional functions in future, the firmware of AVG-MS44 can be upgraded via USB. When you need to upgrade it, please download the latest upgrade file and then you are able to upgrade it through the update EXE software. Copy the EXE software to the PC in controlled and double click the program to upgrade the firmware.

When the program is running normally, it will enter into the interface (as shown in next figure), please press the button **Open** and choose the upgrade file downloaded, and then press the button **Updata**. Then it starts to upgrade. When finished, it will appear with a dialog box showing the message Update success.



Note: The COM number connected with PC is available only for range 1 to 9.

5. Specifications

Video Input		**Video Output**	
Input	4 HDMI	Output	4 HDMI
Input Connector	A Type Female HDMI	Output Connector	A Type Female HDMI
Input Level	T.M.D.S. 2.9V~3.3V	Output Level	T.M.D.S. 2.9V~3.3V
Input Impedance	100Ω (Differential)	Output Impedance	100Ω (Differential)
Video General			
Gain	0 dB	Bandwidth	6.75Gbit/s
Video Signal	HDMI (or DVI-D)	Maximum Pixel Clock	225MHz
Resolution Range	Up to 1920 x 1200@60Hz or 1080P@60Hz	Switching Speed	200ns (Max.)
EDID Management		In-built EDID data and manual EDID management	
HDCP		Supports HDCP 1.3, auto and manual HDCP management.	
Control Parts			
Control Ports	1 IR EYE (black) 1 RS232 (9 pin female D)	Panel Control	Front panel buttons
IR		Default IR remote	
General			
Power Supply	DC12V,2A	Dimension (W*H*D)	482.6 x 43.9 x 236.5mm (1U high, full rack wide)
Temperature	-20 ~ +70℃	Humidity	10% ~ 90%

6. Panel Drawing

7. Troubleshooting & Maintenance

Problems	Causes	Solutions
▪ Color loss or no video signal output	The Connection of the cabling may be incorrect or faulty	Check whether the cables are connected correctly and in working condition.
	▪ Failed or loose connection	▪ Make sure the connection is good
▪ No Video output when switching	▪ No signal at the input / output end	▪ Check with oscilloscope or multimeter if there is any signal at the input/ output end.
	▪ Failed or loose connection	▪ Make sure the connection is good
	▪ The extender may have a fault	▪ Send it to authorized dealer for repairing.
▪ EDID management does not work normally	▪ The HDMI cable is broken at the output end.	▪ Change for another HDMI cable which is in good working condition.
▪ There is a blank screen on the display when switching	▪ The display does not support the resolution of the video source.	▪ Switch again.
		▪ Manage the EDID data manually to make the resolution of the video source automatically compliant with the output resolution.
Cannot control the device by control device (e.g. a PC) through RS232 port	Wrong RS232 communication parameters	Type in correct RS232 communication parameters.
	Broken RS232 port	Send it to authorized dealer for checking.
Static becomes stronger when connecting the video connectors	Bad grounding	Check the grounding and make sure it is connected well.
Cannot control the device by RS232 / IR remote / front panel buttons	The device has a previous fault.	Send it to authorized dealer for repairing.

If your problem persists after following the above troubleshooting steps, seek further help from your authorized dealer.